

4

ONE COPY

AD-A206 767

GENDER AND RACIAL EQUITY IN U.S. MILITARY
OCCUPATIONAL DISTRIBUTION

by

Harold E. Cheatham, Ph.D.

College of Education
The Pennsylvania State University
University Park, Pennsylvania

for

The Defense Equal Opportunity Management Institute
Patrick Air Force Base, Florida

United States Navy-ASEE 1988
Summer Faculty Research Program

Report #: DEOMI-88-4

September 30, 1988

Approved for public release; distribution is unlimited.

DTIC
ELECTE
S 12 APR 1989 D
E

The views, opinions, and/or findings contained in this report are those of the author and should not be construed as an official Department of Defense or Department of the Navy position, policy, or decision, unless so designated by other documentation.

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited (Statement A)		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
4. PERFORMING ORGANIZATION REPORT NUMBER(S) DEOMI-88-4			7a. NAME OF MONITORING ORGANIZATION Office of Naval Research (ONR)		
6a. NAME OF PERFORMING ORGANIZATION Harold E. Cheatham Pennsylvania State U.		6b. OFFICE SYMBOL (if applicable)	7b. ADDRESS (City, State, and ZIP Code) Code 01122 800 N. Quincy Street Arlington, VA 22217		
6c. ADDRESS (City, State, and ZIP Code) 311 CEDAR Building The Pennsylvania State University University Park, PA 16802		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DSAM 80012			
8a. NAME OF FUNDING/SPONSORING ORGANIZATION OASD (FM&P)	8b. OFFICE SYMBOL (if applicable) RM&S	10. SOURCE OF FUNDING NUMBERS			
8c. ADDRESS (City, State, and ZIP Code) OASD (FM&P) (RM&S) Pentagon Washington, DC 20301		PROGRAM ELEMENT NO. 92198D	PROJECT NO. MP 808	TASK NO. 2	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) Gender and Racial Equity in U.S. Military Occupational Distribution (UNCLASSIFIED)					
12. PERSONAL AUTHOR(S) Harold E. Cheatham <i>fr. p. 71</i>					
13a. TYPE OF REPORT Final	13b. TIME COVERED 1988 FROM 30 May TO 6 Aug	14. DATE OF REPORT (Year, Month, Day) 880930	15. PAGE COUNT 27		
16. SUPPLEMENTARY NOTATION Prepared as a part of the Defense Equal Opportunity Management Institute (DEOMI) summer program in conjunction with OASD, ONR, and American Society for Engineering Education.					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	Equal opportunity; gender; race; equity; occupat- ional distribution; career; technical training; personnel; mental measurement. (SDW) ←		
05	08				
05	09				
19. ABSTRACT (Continue on reverse if necessary and identify by block number) Several researchers have pointed out gender and racial inequities in military occupational distribution. Women and ethnic minorities, particularly Blacks, are overrepresented in certain nontechnical, core support occupations (e.g., medical, administrative support) and, conversely, are underrepresented in certain technical, core occupations (e.g., science, technology). Reports suggest that the lower incidence of Blacks in the more prestigious occupat- ions is owed to Blacks' generally poorer performance on the Armed Forces Qualification Test (AFQT). Categorical data generated by race (White, Black, Hispanic), gender (male, female), occupational code, and Mental Cate- gory for the approximate 1.4 million enlisted personnel in the DoD Services (June, 1988) were analyzed by multiple chi square. The variable of interest was AFQT Mental Category and whether it predicted personnel assignment to four selected occupational codes--two core technical, two administrative CONTINUED ON REVERSE →					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL DEOMI/DE, Lt Col Dansby			22b. TELEPHONE (Include Area Code) (407) 494-2746	22c. OFFICE SYMBOL DE	

19. support. Results indicate disparities exist and that women, Blacks, and Hispanics were consistently underrepresented in the core technical occupations, while White males, regardless of DoD Service or Mental Category, were at least at parity in those codes and in a preponderance of instances were significantly overrepresented. Key

FIG 18

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

Abstract

Over the past two decades, several researchers have pointed out gender and racial inequities in military occupational distribution within specific branches of U.S. Armed Services. The conclusion of these writers is that women and ethnic minorities, particularly Blacks, are overrepresented in certain nontechnical, core support occupations (e.g., medical, administrative support) and, conversely, are underrepresented in certain technical, core occupations (e.g., science, technology). Reports suggest that the lower incidence of Blacks in the more prestigious occupations is owed to Blacks' generally poorer performance on the Armed Services Vocational Aptitude Battery (ASVAB) subscales from which the Armed Forces Qualification Test (AFQT) Mental Category, which determines one's assignment to occupational specialties, is derived. Categorical data generated by race (White, Black, Hispanic), gender (male, female), occupational code, and Mental Category for the approximate 1.4 million enlisted personnel in the DoD Services (June, 1988) were analyzed by multiple chi square. The variable of interest was Mental Category and whether it predicted personnel assignment to four selected occupational codes--two core technical, two administrative support. Results indicate disparities exist and that women, Blacks, and Hispanics are negatively affected at a statistically significant level. Specifically, they were consistently underrepresented in the core technical occupations while White males, regardless of DoD Service or Mental Category, were at least at parity in those codes and in a preponderance of instances were significantly overrepresented.

GENDER AND RACIAL EQUITY IN U.S. MILITARY OCCUPATIONAL DISTRIBUTION

Moskos (1973) asserts that, consequent to President Truman's 1948 executive order requiring desegregation of the United States military, and presumably, of equal opportunity and affirmative action initiatives, race relations in the military are considerably more favorable than in the U.S. civilian society. Other researchers report that Blacks perceive the military positively and as being a channel for social mobility (Segal, Bachman & Dowdell, 1978).

Despite this general perception, several researchers have demonstrated the persistence of racial and gender inequity in the U.S. Armed Services (cf. Butler, 1976a; Miller & Ransford, 1978; Schreiber & Woelfel, 1979; Segal & Nordlie, 1979; Wiggins, 1988; Zucca, 1984; Zucca & Gorman, 1986). Excepting Wiggins' paper addressing women in the Department of Defense Services, these researchers focus on this issue specifically in the Army and Navy. The general conclusion from these studies is that when accounting for such variables as education, mental category, time in the Service, and time between promotions, women and ethnic minorities are overrepresented in certain nontechnical, core support occupations and underrepresented in certain technical core occupations. Another general conclusion is that notable discrepancies exist in the time between promotions for Blacks and Whites. Miller and Ransford (1978) conclude, in fact, that the inequities experienced by Blacks are greatest for those with the most to offer the military and are most pronounced among those Blacks eligible for promotion into higher ranks involving supervision of Whites. This conclusion was derived from their re-analysis of Butler's (1976a) data. Butler (1978a) however, responded that their conclusion could not be supported from his data and should, at best, be regarded as an hypothesis which deserves empirical validation.

The inequities which researchers point out have not escaped the attention of the military as one can discern in the Services' enunciated goals of ensuring an enlisted demographic mix reflective of U.S. society; ensuring representativeness of women and ethnic minorities in the officer and senior enlisted ranks; providing career patterns that fully utilize the individual's background and knowledge; and eliminating bias in the assignment and evaluation process [U.S. Navy Annual Assessment of Equal Opportunity Programs FY 87 (USN-AAP, FY 87); U.S. Marine Corps FY 87 Affirmative Action Plan Assessment (USMC AAP, FY87)].

The Services' affirmative action programs, however, enjoy mixed success as revealed in reports noting that the goal for accession of minority officers continues to be exceeded. The same Service also reports a considerably lower rate of selection of women to attend the Staff Noncommissioned Officers Academy (USMC AAP, 1987). In general, all of the Services report the per capita incidence of Black Americans as exceeding their incidence in the U.S. population (see Table 1). The U.S. Army, for example, employs slightly more than 34,000 Black enlisted women (45% of the total number of enlisted women in the Army). Black women in the DoD Services number about 60,000, or 32% of the component of enlisted women. This contrasts with Black enlisted men who number 198,000, or 30% of enlisted Army men, and 396,000, or 22% of enlisted men in the DoD Services (Quarterly Statistics, 1988).

Goals exist to correct under- and overrepresentation of ethnic minorities in certain occupational fields. But these inequities are seen as "not quickly correctable" since most technical field vacancies are filled through guarantees as inducements for enlistment (USMC AAP FY87, p. 5-2). That report further notes that "the problem stems from the lower percentage of minority recruits who are in mental groups I and II; i.e., 44.4% Whites, 17.9% of Blacks, 23.5% Hispanics, and 24.8% Others" (p. 5-2).

Finally, despite considerable documentation that Blacks are comparatively overrepresented among those receiving disciplinary actions, one Service concludes that the racial climate continues to remain healthy (USMC AAP FY87). Moreover, a recent Marine Corps study recognizes the existence of this disparity but concludes, regarding the question of racial bias as a factor, that: "In the one unit where a comparison of [B]lack versus [W]hite decisionmakers could be performed, there was no evidence that the racial identity of commanders is a factor in NJP [non-judicial punishment] decisions." That report continues: "available information indicates that the disciplinary decisionmakers are equitable. The emphasis of further study should focus on explanatory variables other than race, such as the family background variable" (USMC Equity Rates, 1988).

Legal access to equity for women and ethnic minorities in the military has long since been established; yet, the legacy of inequality remains. Despite recent efforts in the DoD Services to ensure equal opportunity, persistent inequality is notable in occupational distribution and rate of promotion or rank attainment for women and ethnic minorities who are disproportionately overrepresented in the U.S. Military. The pattern in the military is not unlike that in the larger U.S. society. Farley and Allen (1987) note that despite obvious and substantial progress, racial differences in the occupational distribution of men remains large. This disparity is less notable among Black men in some of the Services, where they have experienced upgrading in jobs such that their distribution is more similar to that of

TABLE 1

**DoD Armed Services Enlisted Personnel
June, 1988**

	(N)	Women	%	Blacks	%	Black Women	%
Air Force	344186	52484	15.25	59115	17.18	12092	3.51
Army	511085	64328	12.59	155483	30.42	28308	5.54
Marines	144405	8399	5.82	30619	21.20	2212	1.53
Navy	374233	40424	10.80	62227	16.63	9576	2.56
DoD	1373909	165635	12.06	307444	22.38	52188	3.80

	(N)	Black Men	%	Hispanic Women	%	Hispanic Men	%
Air Force	344186	47023	13.66	1588	0.46	10956	3.18
Army	511085	127175	24.88	1764	0.35	19421	3.80
Marines	144405	28407	19.67	371	0.26	7671	5.31
Navy	374233	52651	14.07	2204	0.59	17195	4.59
DoD	1373909	255256	18.58	5927	0.43	55243	4.02

White women. Of interest and instruction for the military is the notation that in the U.S. labor force, Black men had, by 1980, attained occupational distribution similar to that reached by Whites in 1950.

The researchers reviewed (Butler, 1976a,b; 1978a,b; Miller & Ransford, 1978; Segal & Nordlie, 1979) conclude unanimously, that, for the 1970's, Blacks were enduring slower promotion and "intensified inequity" (Miller & Ransford, 1978, p. 66), and that race, rather independent of social class, economic status, education and mental category has a sizable impact on occupational attainment.

Miller and Ransford (1978) conclude that there needs to be some demonstration that the attention that the Services are paying to equity issues is primarily responsible for the Services' being an attractive occupation for Blacks, as opposed to the less desirable explanation that the Services are simply the preferable alternative to discrimination in the U.S. labor force. Recent observations (Moskos, 1986) suggest that Blacks continue to be overrepresented in the Armed Services and that Black youth of demonstrated intellectual acumen, or what the Services term "quality accessions," are opting for entry into the military over matriculation into college.

If, indeed, a new generation of expectant Black Americans becomes disenchanted because they are subjected to age-old discrimination in the form of being clustered into nontechnical, core support occupations and of receiving slowed promotions, then, one can only conclude that the Services are not serious about the proclamations of equal opportunity.

Fifteen years have passed since Butler's data, reported in 1976, were collected, and more importantly, 1988 marks the 40th anniversary of Executive Order #9981 (requiring desegregation of the U.S. Armed Services). This is a proper time to investigate, again, the contention that patterns of discrimination are changing in the Services.

The current study continuing, in part, the earlier investigations, focuses specifically on the question of whether women and ethnic minorities (primarily Blacks, since the incidence of other ethnics is yet too small in most cases to be remarkable, except for noting of trends). Of particular interest is the role of the Armed Forces Qualification Test (AFQT) in determining the assignment of enlisted personnel to various career fields. This study is focused on discrepancies which might exist between expected and observed representation of both genders and three ethnic groups (White, Black, and Hispanic) in certain Occupational Codes (Codes). Specifically, it is asserted that if AFQT Mental Category actually discriminates among enlisted personnel, their observed representation in selected Codes ought to conform to the predicted representation.

Method

Population

Data reported here were provided by the Defense Manpower Data Center to the Defense Equal Opportunity Management Institute (Patrick AFB, FL), under whose auspices the study was conducted. The data were generated to reflect the job assignment and Mental Category of all personnel, by gender and by ethnicity, in the DoD Armed Services. Such data are compiled quarterly and are reported to authorized agencies. Data reported in this study are for the entire enlisted population of the Air Force, Army, Marine Corps, and Navy as of June 1988. No sampling procedures were required.

Procedure

After visual inspection of the data, a decision was made to focus on four Occupational Codes (Codes): 0, 3, 5, and 6, which, across the Services, have the most apparent discrepancies in equitable representation of personnel on the basis of gender and ethnicity. Two exceptions should be noted: U.S. Marine Corps has no personnel in Code 3, and U.S. Navy has more apparent discrepancies in Code 2 than in 3.

Expected values were calculated for each of the four Specialties (Row total x Column total/Grand total), followed by calculation of the differences squared between the observed and expected values. Multiple chi-square* analyses were used for examining variance among these categorical data. Using a two by three (male, female, by White, Black, and Hispanic) table, a chi square statistic was computed for the four selected Codes: 0, 3, 5 and 6 (Table 2 presents Codes). The alpha level of significance was set at $p < .05$, with 2 degrees of freedom and a critical value = 5.991.

The variable of interest is the Armed Forces Qualification Test (AFQT) Mental Category (Category) and whether it accurately predicts personnel assignment to Occupational Code. AFQT scores are derived from subscales of the Armed Services Vocational Aptitude Battery (ASVAB), a test required of prospective enlistees. The ASVAB, while not touted as an aptitude test, is regarded by the DoD Services as an index of the individual's "trainability" (Knapp, Pliske, & Elig, 1987, p. 1).

*For the purposes of this study using categorical data, chi square was deemed appropriate. A log linear model produced 120 cells (gender = 2, ethnicity = 3, Code = 4, mental category = 5) numerous p values and concomitant interpretation problems.

ENLISTED OCCUPATION CATEGORIES

- | | |
|--|---|
| <p>0. INFANTRY, GUN CREW AND SEAMANSHIP.</p> <ul style="list-style-type: none"> a. Infantry. b. Armor and Amphibian. c. Combat Engineer. d. Artillery/Gunnery, Rocket/Missile. e. Air Crew. f. Seaman. g. Installation Security. <p>1. ELECTRONIC EQUIPMENT REPAIR.</p> <ul style="list-style-type: none"> a. Radio/Radar. b. Fire Control Electronic System (Non-Missile). c. Missile Guidance, Control and Checkout. d. Sonar Equipment. e. Nuclear Weapons Equipment. f. Computers. g. Teletype and Cryptographic Equipment. h. Other Electronic Equipment. <p>2. COMMUNICATIONS AND INTELLIGENCE.</p> <ul style="list-style-type: none"> a. Radio and Radio Code. b. Sonar. c. Radar and Air Traffic Control. d. Signal Intelligence/Electronic Warfare. e. Intelligence. f. Combat Operations Control. g. Communications Center Operations. <p>3. MEDICAL AND DENTAL</p> <ul style="list-style-type: none"> a. Medical Care. b. Technical Medical Service. c. Related Medical Services. d. Dental Care. <p>4. TECHNICAL SPECIALIST.</p> <ul style="list-style-type: none"> a. Photography. b. Mapping, Surveying, Drafting and Illustrating. c. Meteorology. d. Ordnance Disposal and Diving. e. Musician. f. Technical Specialist, General. | <p>5. FUNCTIONAL SUPPORT AND ADMINISTRATION.</p> <ul style="list-style-type: none"> a. Personnel. b. Administration. c. Clerical. d. Data Processing. e. Accounting, Finance and Disbursing. f. Functional Support, General. g. Morale and Welfare. h. Information and Education. <p>6. ELECTRICAL/MECHANICAL EQUIPMENT REPAIR.</p> <ul style="list-style-type: none"> a. Aircraft. b. Automotive. c. Wire Communication. d. Missile Mechanical and Electrical. e. Armament and Munitions. f. Shipboard Propulsion. g. Power Generating Equipment. h. Precision Equipment. i. Other Mechanical and Electrical Equipment. <p>7. CRAFTS.</p> <ul style="list-style-type: none"> a. Metallurgy. b. Construction. c. Utilities. d. Lithography. e. Industrial Gas and Fuel Production. f. Fabric, Leather and Rubber. g. Other Craftsman. <p>8. SERVICE AND SUPPLY.</p> <ul style="list-style-type: none"> a. Food Service. b. Motor Transport. c. Material Receipt, Storage and Issue. d. Law Enforcement. e. Personal Service. f. Auxiliary Labor. g. Forward Area Equipment Support. h. Other Services. <p>9. INDIVIDUALS.</p> <ul style="list-style-type: none"> a. Patients. b. Students/Trainees. c. Other. |
|--|---|

(SOURCE: MILITARY WOMEN, 1987)

The ASVAB is administered under controlled procedures, by military personnel at Recruiting Centers, "to determine eligibility for enlistment and to assist in determining initial training assignment" (Knapp et al., 1987, p. 1). AFQT scores are derived from applicants' scores on the Word Knowledge, Arithmetic Reasoning, Paragraph Comprehension, and half of the score on the Numeric Operations subtests of the ASVAB. On the basis of the resulting score, one is assigned a Mental Category.

Scores are divided, on a 100 percentile basis, into five Mental Categories: (I) 99-93, (II) 92-65, (IIIA) 64-50, (IIIB) 49-31, and (IV) 30-10*. These divisions differ somewhat by Service. The Air Force uses a 1-5 numbering system and categorizes personnel with scores 64-31 into Category 3, and scores of 30-21 into Category 4. Those below the 20th percentile are not accepted into that Service.

Mental Category, as discussed in this paper, refers to the I-IV division, recognizing that in all of the Services, except Air Force, the 50th percentile is the cutoff for the top three Mental Categories, or those personnel sometimes referred to as "quality" accessions. Those in percentiles 49 and below are assigned to Mental Categories IIIB and IV and generally regarded as low priority recruits. In the Army, for example, Mental Category determines eligibility for bonuses and reenlistment options.

As the specific mission of each Service is unique, each classifies and manages enlisted (and officer) personnel according to its force structure. Thus, military occupational categories vary among the Services, but have sufficient continuity and similarity to be codified to enable comparison of occupational titles within the enlisted force. There are 10 enlisted Occupational Categories or Codes, each of which has a variety of Specialties within it. To facilitate exposition, the DoD Enlisted Occupation Categories (Codes) are presented in Table 2.

*Personnel below the 10th percentile make up a sixth group (Category V) but are disqualified for military service by law.

Results

Visual inspection of the June 1988 DMDC listing of incidence of personnel in each of the 10 Codes suggested that women and ethnic minority--Black and Hispanic--males were not equitably represented across Codes as would be expected (i.e., in conformance with statistical prediction). Further, the incidence of over- and underrepresentation seemed to be peculiar to four Codes, without regard to the AFQT Mental Category of the personnel.

Using a 2 x 3 (male and female, by White, Black, and Hispanic) table, a chi-square statistic was computed for the four selected Codes: (0) Infantry, Gun Crew and Seamanship; (3) Medical and Dental; (5) Functional Support and Administration; and (6) Electrical/Mechanical Equipment Repair.

The alpha or level of significance was set at $p < .05$, with 2 degrees of freedom and a critical value = 5.991. In every case statistical significance obtained between the expected and observed incidence of representation. This finding holds without respect to the Mental Category, which some maintain is the discriminator or screen for assigning personnel to the various Specialty Codes.

A remarkable and almost invariant pattern emerges across the DoD Services. Specifically, for women, and Blacks and Hispanics, the pattern is underrepresentation in Codes 0 and 6--the two core, technical occupational categories chosen for study--and overrepresentation in Codes 3 and 5, the two core support, nontechnical occupational categories examined. The converse was found for White men, who regardless of DoD Armed Service or Mental Category, are found at least at parity, but in the preponderance of instances, are overrepresented in the core, technical Codes and, in almost every case, are underrepresented in the nontechnical Codes.

As pertinent to each DoD Service, summary discussion of the observations follow. It should be noted again, that no exception is made in this discussion of expected values for such factors as "traditionality" or similar nuances which might account for one class of persons being disproportionately represented. Rather, it is assumed that, particularly when using the specific variable, Mental Category, observed frequency ought to coincide with expected frequency. Also, it should be noted that the focus of this discussion is on women and on Black and Hispanic men. Thus, although we will not often discuss White males it follows that if the focused cohorts (i.e., women, Blacks, and/or Hispanics) are over- or underrepresented, the converse statement holds for White males.

Air Force

For each Mental Category, women are significantly underrepresented in Codes 0 and 6 and overrepresented in Codes 3 and 5. Black women in Mental Categories (Category/ies) I, II, and IIIA are overrepresented by two to two and one-half times expected frequency in 3 and 5 and by as much as three times expectancy in IIIB, Code 5. It follows then, that this cohort is very significantly under expected representation for both Categories IIIB and IV in Code 6.

Women's representation contrasts with Black and Hispanic men's statistically significant underrepresentation in Code 0 in all but Category I where they are a small cohort but where they are approximately at parity. They are significantly underrepresented in Code 6 in Mental Category II. For Categories IIIA and IIIB, Black men are over expected representation in Codes 3 and 5 and under in 6, while Hispanic men reach predicted representation in these Codes for Categories IIIA and IIIB. In Category IV, Black men, like Black women, are significantly over expectancy in 5 and under in 6, but not with quite the glaring discrepancy observed for Black women's underrepresentation in Code 6 (i.e., Expected rate = 37% versus Observed rate = 4%). While Black and Hispanic men are over expected incidence in Code 3, Categories I-IIIB, at Category IV they are at expected incidence, and all women in Category IV are significantly over predicted incidence.

It follows, then, that in the Air Force, White males, without regard to Mental Category, are more equitably distributed among the examined Occupational Codes. They, more nearly than others, approximate their expected numbers in each Code. In fact, as the Categories IIIB and IV are examined, the disparate distribution of Blacks becomes more pronounced, with Black women being even more maldistributed than Black men; that is, Black women are the most inequitably distributed of all Air Force personnel. They range from 50%-70% of their total cohort being assigned to Code 5 in Categories IIIA, IIIB and IV.

Another way to focus the inequity is to examine the percentage of each cohort which ranks in the top three Mental Categories by gender and by ethnic group. Such examination reveals that 77% of White women (45% are in Category II), versus 75% of White men (43% are in Category II), are in the top three Categories. Black women, Black men, Hispanic women, and Hispanic men register 55%, 44%, 59%, and 53%, respectively in Categories I-III. Stated otherwise: in cross-gender, same ethnic group comparisons, women register higher percentages than do men in the top three Mental Categories, with White women commanding the highest and Black men, the lowest percentages. Yet, using Mental Category as the discriminator or qualifier variable, these personnel are not occupationally distributed as Mental Category would dictate.

Army

The pattern which emerges from these data for White, Black, and Hispanic women reveals that across all Mental Categories they are underrepresented in Occupational Codes 0 and 6 and overrepresented in Codes 3 and 5 at a statistically significant level. Of all women, and across all Mental Categories, Black women are more disproportionately represented in Code 5. In fact, descending the Mental Categories, overrepresentation of Black women in Code 5 becomes increasingly greater with fully 50% of all Black women in Mental Categories IIIA, IIIB, and IV being assigned to Code 5. This same effect has been noted in the Air Force data where about 70% of Black women in the lower Categories are in Code 5. Black men, in contrast, are under expectancy in Code 0 for Mental Categories I-III A. However, in the lower two Categories, Black men approximate expectancy in all four Codes examined except for Code 5, Category IIIB, where they are over expected representation.

Hispanic men are over predicted incidence for Categories I, II, IIIB, and IV for Codes 0 and 3, and under predicted incidence for Code 6 in all but Category I. White men in Mental Category II are significantly underrepresented in Code 5, and significantly overrepresented in Code 6. Hispanic women in the Army currently number 1750, with too few in Category I (i.e., 18) to permit much comparative discussion. In Categories II, III, and IIIB their patterns are the same as for all women, with gross overrepresentation in Code 5. This is most notable at Categories IIIA and IIIB where a preponderance of all Hispanic women in the Army are in Codes 3 and 5. While Hispanic Army women currently are a comparatively small cohort (i.e., not disproportionate to their number in the larger society), based upon U.S. and DoD projections of future demographic composition, the present pattern of assignment to occupational codes is troublesome, should the component of Hispanic women increase.

As in the case of Air Force, the 75% of the total cohort of White women in the Army which ranks in Categories I, II, and IIIA exceeds all other personnel. White males register 68% of their cohort in the top three Categories. The 38% of Black women in these Categories is less equitably distributed among Codes than is the 25% Black male cohort. It seems clear that when the rationale is offered that Blacks' disparate distribution among the Occupational Codes is owed to their generally higher incidence in the lower Mental Categories, the reference is not Service specific.

Marines

The Marine Corps has no personnel in DoD Occupational Code 3, affecting, to some extent, our proposed comparisons of selected Codes across the DoD Services. It should be noted that the Marine Corps, in contrast with the other Services, has no women in Code 0 (i.e., Infantry, Gun Crew, Seamanship). This fact is in keep-

ing with Marine Corps policy, and for our purposes here, clearly affects the distribution of women across Codes, since one of those examined is closed. Further, although the Marine Corps is a smaller force than the others, the patterns which emerge upon inspection of the distribution are not unlike those of the other Services. The disparities in distribution across the occupational codes appear to be especially problematic for women and ethnic minorities.

The expectancy distribution for women in Code 0, across Mental Categories, ranges from 17% to 31%. But, as noted earlier, no women Marines are in this Code Specialty, a fact which affects the distribution of men. When observing men's distribution in Codes 0 and 6, representation of Black men is significantly under prediction for every Mental Category, and over prediction for Code 5.

In Code 5, Black men in Mental Categories II, IIIA, and IIIB are overrepresented by a statistically significant margin beyond their expected incidence. In Category IV, this cohort is nearly 25% over the incidence predicted for assignment to Code 5. Likewise, regardless of Mental Category, Black men are significantly under predicted representation in Code 6. Hispanic men, overall, more nearly approximate the expected frequencies for each Code by Mental Category. While they are underrepresented, at a statistically significant level, they approach parity in Specialty 6, Mental Categories II-IV.

From these data it appears that Black and Hispanic men, even while maldistributed in the Marine Corps Codes 0, 5, and 6 are less so than are their counterparts in the other Services. This is particularly noteworthy when considering that 30% of Black men, 41% of Hispanic men, and 66% of White women rank in Categories I-IIIA. Only 8% of White, 17% of Hispanic, and 20% of Black women rank in Categories IIIB and IV. According to Mental Category qualifications, the disparate distribution of women is quite apparent because all women exceed all men in percentage of representation in higher Mental Categories (i.e., White women, 92%; Hispanic women, 80%; Black women, 80%; versus White men, 66%; Hispanic men, 41%; and Black men, 30%).

As regards proportional occupational distribution, it seems safe to conclude from these data that occupational distribution of Black women is the most disparate of all Marines. They are overrepresented between three and five times expectancy in Mental Categories I-IIIB. Black women in IIIB are glaringly overrepresented in Code 5, with fully 57% of their total assigned to this single Occupational Code. Such overrepresentation occurs for Hispanic women in Category II with fully 59% of their cohort assigned to Code 5.

Navy

The general pattern which emerges for the other Services is consistent for the Navy, and particularly for women being significantly underrepresented in Codes 0 and 6 and significantly overrepresented in Codes 3 and 5, Mental Category notwithstanding. In almost all instances the overrepresentation of women in Codes 3 and 5 ranges to greater than three times the predicted incidence. White women are more overrepresented in Specialty 3, in all Mental Categories, than are either Black or Hispanic women. Black women, in contrast, tend to be most underrepresented of all women in Code 6 for Mental Categories II, IIIA, IIIB and IV and less underrepresented than are White women in Code 6, Category I.

Regarding ethnic minority men, as in the other Services, for Code 0, Black and Hispanic men are significantly underrepresented, except in Category IV where they are over expected representation. Likewise, Black men, and Hispanic men, to an almost comparable extent, are significantly over expected representation in Categories II, IIIA, and IIIB for Specialties 3 and 5, and under in Specialty 6. Again, focusing on percentage of total cohort by gender and by ethnicity in the higher Mental Categories, White women in the Navy rank first with 72% of their number in Categories I-III A, followed by White men at 70% and Hispanic men at 48%.

The summary observation is that, although AFQT Mental Category is touted as the "discriminator" and lower AFQT scores are frequently thus cited to rationalize Black (and sometimes Hispanic) soldiers' and sailors' representation in less prestigious Occupational Codes, when AFQT is controlled statistically these data allow the conclusion that across the DoD Services, women, Blacks, and Hispanics, with few and unremarkable exceptions, are significantly under parity in certain Occupational Codes. Despite the fact that some ethnic minorities (in sheer numbers) are not as heavily represented in the top Mental Categories, which would account for a lack of overall numerical representation in certain Codes, even those minority Service personnel who are in the top Mental Categories are not proportionately distributed. A similar argument obtains for the lower Mental Categories.

Discussion

This study was undertaken to examine whether, on the basis of AFQT Mental Category, enlisted personnel in the DoD Armed Services are equitably distributed among the 10 occupational Codes. Of particular interest was the distribution of women and ethnic minority men. The data analyses permit the conclusion that certain disparities exist and that women, Blacks, and Hispanics are affected at a statistically significant level. It was found that, as the Services' representatives note, ethnic minorities (i.e., Blacks) are not as heavily represented as are Whites in the top three Mental Categories, and consequently are lower in numerical representation in certain Codes. Further, it was found that ethnic minorities and women who rank in the top Categories are not proportionately distributed among the Occupational Codes. A parallel observation obtains for lower Mental Categories where observed incidence is inconsistent with predicted incidence for certain Codes.

Correlational analyses as those conducted for this study do not answer, but give rise to, questions of what accounts for the demonstrated discrepancies. It is possible that the disparities are owed to: (1) the existence of structural discrimination/racism/sexism; (2) self-selection of individuals into traditional occupations or those where their racial or gender peers are employed, or are "steered" by recruiters; (3) problems inherent to the the ASVAB (i.e., to its construction, instrumentation or interpretation). Clearly, some other factors or some combination of those suggested here could be operating. Discussion of those cited follows.

Structural Discrimination

The terms racism, sexism, institutional racism, and structural discrimination are among those used by students of equity issues to characterize the barriers. Butler (1976a) notes that institutional racism operates without racist actions of real life people. Similarly, Hill (1986) refers to structural discrimination as unintended, adverse consequences of societal trends and policies.

Fewer apparent, systematic studies have addressed the disposition of ethnic minorities than have addressed women in the military. Review of the evidence which does exist, however, suggests that similar attitudes and lore operate against both groups, producing adverse consequences (cf. Butler, 1976; Hill, 1986; Farley & Allen, 1987; St. Pierre, Ayele, & Bromall, 1987; Verdugo & Verdugo, 1988).

Historically, ethnic minorities and women were restricted from serving in certain military occupations. Enloe (1988) notes that prior to the 20th century the social, political, cultural, and economic boundaries of the military were much narrower and

thus, provided little promise of high social prestige for most men, who then and now set the norms. O'Connell (1982) discusses a normative system and provides insight into the problems faced by those who would integrate it, seeking dispersion of the power and prestige. She suggests that those within the organization construct it according to idealized conceptualizations which are not coincident with actual, daily job performance requirements (see also Kanter's 1977 postulation that group structure shapes the interaction context and influences the patterns of interactions of token group and dominant group participants). Such shaping results in a work environment characterized by elements which have nothing to do with the tasks to be completed, and in consequent effects to morale and productivity.

Some of the specific effects on initiates have been identified as: prejudiced efficiency ratings and underutilization of their talents by supervisors (cf. Saromines, 1975; Savell, Rigby & Zbikowski, 1982; Thomas, Holmes, & Carroll, 1983); discouragement and lowered optimism about one's ability (cf. Adams, 1984; Bridges, 1988; Durning, 1982; Kerce & Royle, 1984; Spicher, 1980); and lowered satisfaction, differential perceptions of one's performances in comparison with one's competitors', and higher attrition rates (cf. Hammond, 1986; Hinsdale, Collier, & Johnson, 1978; Ross, Nogami, & Eaton, 1984). It is noteworthy that Manggolo (1987) reports that Blacks and Hispanics are generally more satisfied with military life than are Whites and that race yields a significant main effect in the determination of job satisfaction.

Regarding the effect of prejudiced efficiency ratings, Gardner and Discenza (1988) conclude that gender differences in rating applicant characteristics are consistent but not stable. They conclude that raters do not have a stereotype of a good applicant but judge applicants on such criteria as motivation, interpersonal relations, and personality/appearance. Their data lead them to "question the legitimacy of the assertion that [gender] effects exist [in rating applicant qualifications]" (1988; p. 306).

Forty years have passed since the enunciation of policies to ensure equality of opportunity in the Armed Services. The recent two decades also have been marked by dramatic increases in the ethnic and female component the Armed Services. Despite Executive Order 981 of 1948 and the Women's Armed Services Integration Act of 1948, considerable demonstrations of valor and patriotism, and some impressive research evidence that those previously restricted or excluded likely would not negatively affect force readiness, structural restrictions yet prevent their full participation (cf. Carolus, 1978; Devilbiss, 1985; Morris, 1985; White, 1979). These writers maintain that women's and ethnic minorities' quest for equity in occupational assignment collides with normative systems.

Observing that policy and law ensuring equity already exist without having eliminated inequity, it might be worthwhile for the DoD to turn earnest attention specifically to identifying and revising the normative systems or organizational practices (i.e., structural discrimination) which result in overrepresentation of women and ethnic minorities in administrative and medical occupations, and underrepresentation in science, engineering, and technology fields.

Self-Selection

A second factor or set of factors which might impede equity in occupational distribution is related to the first. Gender-role socialization predisposes one to interest, practice, and proficiency in "appropriate" gender-role behaviors, including vocational and career choice. Sociocultural experiences of women and ethnic minority men, including their schooling and guidance and counseling experiences, and their employability communicate to them that there are certain occupations and careers which are essentially foreclosed.

Several research reports portray the effects of gender-role socialization. Adams (1984) reports that Military Academy women, compared to men cadets, have distinct problem areas which affect their attitudes and commitment to career. Hinsdale et al. (1978) report that Navy women in traditional occupations describe themselves as being more feminine than women in nontraditional occupations. They report further, that for these women, many female traits are negatively related to satisfaction, productivity and reenlistment intentions while masculine traits are positively related to these same factors for women in nontraditional jobs. Bridges (1988) reports that women, but not men, are influenced in career choice by gender dominance of a field. And Collins (1988) concludes that even in occupations where women predominate numerically, men hold the top jobs. Given these identifiable labor market and societal realities it is logical that some women and ethnic minority men would self-select occupations which clearly have welcomed their counterparts. On the other hand, since there is evidence that women of high ability and ethnic minorities from better backgrounds and with better credentials are disproportionately attracted to and plan to remain in the Armed Services (Boris, Kim & Johnson, 1985; Moskos, 1986), some must also be seeking options for nontraditional employment.

No literature was found which clarifies the role, if any, of military recruiters in the disproportionate assignment of enlisted women and minorities to nontechnical codes. There is a report that the U.S. Military Academy has designed and implemented a developmental program to select and prepare admissions officers for ensuring high quality accessions and for assisting minority cadets with career planning (Burke, Kramer & Butler, 1982). Similar attention to preparing recruiters might reduce

the disparity in occupational code assignment of enlisted personnel. The Military Academy program appears to be designed to prepare officers to serve as mentors to officers in training. A mentor model seems also to have considerable potential for assisting in providing greater occupational equity for enlisted women and ethnic minorities.

A substantial literature in education and business focuses on the role of mentoring in promoting career and leadership development (cf. Anderson & Davanna, 1980; Collins & Scott, 1978; George, 1981; Klopff, 1982; Roche, 1979; Speizer, 1981; and Wright & Wright, 1987). Shapiro, Haseltine, and Rowe (1978) delineate a range of helping roles, the most expansive of which is mentor. They suggest that a mentorship is an intense paternalistic relationship in which the mentor serves as both teacher and advocate. A mentor generally is one recognized for competence and achievement in the career field, who serves the mentee in an advisory and support role. As such the mentor provides encouragement, a communication link, and consultation on professional (and sometimes personal) career-related matters. A most important role of the mentor is to provide the mentee with "legibility" by translating the unwritten rule and politics of the workplace and profession. Being mentored, then, assists one's mastery of job and career issues and thereby increases the prospects of early and regular attainment of job and career benefits. The only study found regarding mentoring in the U.S. Military (Gouge, 1986) was of Air Force officers in training. Among other specific notions he studied their perceptions of the role of a mentor, expectations of gaining a mentor, and expected outcomes of the process of being mentored. Gouge (1986) reports that, consistent with other studies, his respondents rank "role model" as the most important role of the mentor. He also reports substantial interest in and positive expectations about mentoring, but that mentoring was not seen as essential to career success. This conclusion stands in stark opposition to that of Collins & Scott (1978) who proclaim in the title of their Harvard Business Review article that "everyone who makes it has a mentor."

The contradiction likely inheres in the differences between the two cohorts to which these researchers refer. Whatever the source, for the course which has been enunciated (i.e., to provide occupational equity in the DoD Armed Services), developing and implementing a mentoring program seems a reasonable and even appropriate undertaking.

Measurement Instruments

Finally, as the DoD Services continue the quest for providing equity, special attention ought to be given to the characteristics and interpretation of the ASVAB, the instrument used to classify and assign personnel. The ASVAB, and its derivative, the AFQT, may also account for some of the noted disparity in occupational assignment.

The arguments referencing cultural bias and the disadvantage inherent in psychometric instruments are familiar and eloquently advanced elsewhere (cf. Baldwin, 1987; Hilliard, 1987). According to the results of a study commissioned by the DoD (Identification of Alternative..., 1988) the ASVAB apparently has some of the problems noted by opponents of certain psychometric instruments. That report first notes measurement theorists' and researchers' criticisms of the ASVAB's high intercorrelations among composite scores, lack of differential validity, inappropriate use of information subtests, and the content and metric of score reports. Of critical importance is the observation made earlier in this paper that while the ASVAB is not touted as an aptitude test, the use of its results to predict "trainability" seems inherently contradictory.

On the point of the use of the composite scores, the expert panel reviewing the ASVAB concludes: "differences in composite scores are more apparent than real" (p. 11). Further, the panel notes that the subtests are inappropriately used as measures of one's ability to learn technical trades as these subtests are measures of experience rather than of ability. Used for selection into technical occupations, these measures, the panel concludes, are discriminatory, screening out women and talented but inexperienced men from occupations where they could succeed (p. 11). Clearly then, the AFQT Mental Category, as derived from certain highly intercorrelated subscales of the ASVAB, has had a negative effect on the assignment of women and ethnic minorities.

It seems appropriate, from the empirical evidence reviewed here, to suggest that the DoD has an opportunity to make good on its commitment to equity for all citizens by undertaking to adjust the conventions which clearly are responsible for consigning women and minorities disproportionately to the dungeon door. Making the requisite adjustments prior to the start of the 21st century when minorities are predicted to numerically predominate the Services is especially critical as racial and gender peer role models are likely to shape women's and ethnic minorities' perceptions about the military as a career.

References

- Adams, J. (1984). Early career preparation, experience, and commitment of female and male West Point graduates. Volume 2. West Point, NY: U.S. Military Academy. (Report # USMA-TR-84-5;84-6).
- Anderson, C., & Davanna, M. A. (1980). Mentors: Can they help women get ahead? Career Development Activities, 2 (2), 5-8.
- Baldwin, J. A. (1987). African psychology and Black personality testing. The Negro Educational Review, 38 (2-3), 56-66.
- Bridges, J. S. (1988). Sex differences in occupational performance expectations. Psychology of Women Quarterly, 12, 75-90.
- Burke, W. P., Kramer, R. C., & Butler, R. P. (1982). Development of performance-based assessment centers for admissions officers at the U.S. Military Academy. Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences.
- Butler, J. S. (1976a). Inequality in the military: An examination of promotion time for Black and White enlisted men. American Sociological Review, 41, 807-818.
- Butler, J. S. (1978a). Enlisted promotion rates: A methodological note. Journal of Political and Military Sociology, 6, 75-77.
- Butler, J. S. (1976b). Assessing Black enlisted participation in the Army. Social Problems, 23, 558-566.
- Butler, J. S. (1978b). Inequality in the military: Reply to Hauser. American Sociological Review, 43, 607-610.
- Carolus, D. (1978). A study of the attitudes of married Minuteman crewmembers and their wives concerning female Minuteman crewmembers. Unpublished Master's Thesis, Wright-Patterson Air Force Base, OH: Air Force Institute of Technology.
- Collins, E. G. C., & Scott, P. (1978). Everyone who makes it has a mentor. Harvard Business Review, 89-101.
- Collins, R. (1988). Women and men in the class structure. Journal of Family Issues, 9 (1), 27-50.
- Department of the Army affirmative action plan. (1985). Washington, DC: Headquarters, Department of the Army (Pamphlet 600-26, 13 December 1985).

- Devilbiss, M. C. (1985). Gender integration and unit deployment: A Study of GI Jo. Armed Forces and Society, 11 (4), 523-552.
- Durning, K. P. (1982). How enlisted women and men view the Navy organization. San Diego, CA: Navy Personnel Research and Development Center. (Report # NPRDC TR 82-23).
- Enloe, C. (1988). United States country report: Women and militarization in the late '80's. Minerva, 6 (1), 72-92.
- Farley, R., & Allen, W. (1987). The color line and the quality of life in America. New York: The Russell Sage Foundation.
- Gardner, D. G., & Discenza, R. (1988). Sex effects in evaluating applicant qualifications: A re-examination. Sex Roles, 18 (5/6), 297-308.
- George, P. (1981). Mentoring for career women. Training, 18, 44-49.
- Gouge, J. A. (1986) Air Force mentoring: The potential protege's perspective. Unpublished Master's Thesis. Wright-Patterson Air Force Base, OH: Air Force Institute of Technology
- Hammond, G. M. (1986). Job attitudes of medical personnel. Maxwell Air Force Base, AL: Air Command and Staff College. (Report ACSC-86-1040; April).
- Hill, R. B. (1986, Spring). Public policies and Black progress: Some popular misconceptions. Centerboard, 24-34.
- Hilliard, A. (1987). Psychometrics and African-American reality: A question of cultural antimony. The Negro Educational Review, 38 (2-3).
- Hinsdale, K., Collier, B., & Johnson, J. D. (1978). Navy enlisted women in traditional and nontraditional jobs. Albion, MI: Validated Instruction Associates, Inc. (August).
- Hout, M. (1988). More universalism, less structural mobility: The American occupational structure in the 1980's. American Journal of Sociology, 93 (6), 1358-1400.
- Identification of alternative approaches for reporting Armed Services Vocational Aptitude Battery (ASVAB) scores in the DoD student testing program. (1988, March). Washington, DC: Booz-Allen & Hamilton Inc., (Contract MDA903-87-R-0138).

- Kanter, R. M. (1977). Some effects of proportions on group life: Skewed sex ratios and responses to token women. American Journal of Sociology, 82, 965-990.
- Kerce, E. W., & Royle, M. H. (1984). First-term enlisted Marine Corps women: Their backgrounds and experiences. San Diego, CA: Naval Personnel Research and Development Center. (Report #NPRDC-TR-84-57; September).
- Klopf, G. J. (1982, January). The case for mentors. Educational Digest, pp. 34-35.
- Knapp, D. G., Pliske, R. M., & Elig, T. W. (1987). The Computerized Adaptive Screening Test (CAST): An examination of test validity and test fairness. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (Technical Report 747).
- Manggolo, I. (1987). Job satisfaction and race among military enlistees. Unpublished Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Miller, J., & Ransford, H. E. (1978). Inequality in the military: Implications for organizations, occupational mobility and social stratification. Journal of Political and Military Sociology, 6, 65-74.
- Military women in the Department of Defense. (1987). Washington, DC: Office of the Secretary of Defense.
- Morris, S. M. (1985). An analysis of the effects of varying male and female force levels. Springfield, VA: Syllogistics, Inc. (March).
- Moskos, C. C. (1973). The American dilemma in uniform. Annals of the American Academy of Political and Social Science, 406 94-106.
- Moskos, C. C. (1986). Success story: Blacks in the Army. The Atlantic Monthly, pp. 64-72.
- Nevill, D. D., & Schlecker, D. I. (1988). The relation of self-efficacy and assertiveness to willingness to engage in traditional/nontraditional career activities. Psychology of Women Quarterly, 12, 91-98.
- O'Connell, M. (1982). Gender integration of a traditionally male field: A definition of occupation. The University of Connecticut: Storrs, CN.

Quarterly statistical profile of minorities and women in the Department of Defense Armed Forces and the United States Coast Guard. (1987). Patrick AFB, FL: Defense Equal Opportunity Management Institute.

Quarterly statistical profile of minorities and women in the Department of Defense Armed Forces and the United States Coast Guard. (1988). Patrick AFB, FL: Defense Equal Opportunity Management Institute.

Roche, G. R. (1979, January). Much ado about mentors. Harvard Business Review, pp. 14-28.

Ross, R. M., Nogami, G. Y., & Eaton, N. K. (1984). The impact of occupational specialty and soldier gender on first enlisted attrition. Alexandria, VA.: Army Research Institute for the Behavioral and Social Sciences. (Report # ARI-TR-627).

Russell, J. E. A., Rush, M. C., & Herd, A. M. (1988). An exploration of women's expectations of effective male and female leadership. Sex Roles, 18 (5/6), 279-287.

St. Pierre, M., Ayele, M., & Bromall, I. H. (1987). Accession and retention of minority Coast Guard officers. Washington, DC: United States Coast Guard. (Report # CG-D-01-88)

Saromines, M. A. (1975). Womanpower: How attitudes of the NCO affect proper utilization of women. Maxwell Air Force Base, AL: Air Command and Staff College.

Savell, J. M., Rigby, C. K., & Zbikowski, A. A. (1982). An investigation of lost time and utilization in a sample of first-term male and female soldiers. Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences. (Report# ARI-TR-607).

Schreiber, E. M., & Woelfel, J. C. (1979). Effects of women on group performance in a traditionally male occupation: The case of U.S. Army. Journal of Political and Military Sociology, 7, 121-134.

Scott, J. W. (1988). Deconstructing equality-versus-difference: Or, the uses of poststructuralist theory for feminism. Feminist Studies, 14 (1), 33-50.

Segal, D. R., & Nordlie, P. G. (1979). Racial inequality in military promotions. Journal of Political and Military Sociology, 7, 135-142.

Speizer, J. J. (1981). Role models, mentors, and sponsors: The elusive concept. Signs. (Summer).

- Spicher, C. R. (1980). Equal opportunity and treatment: Perceptions of United States Air Force Military men and women. Maxwell Air Force Base, AL: Air Command and Staff College. (Report #2350-80).
- Tetreault, M. A. (1988). Gender belief systems and the integration of women into the U.S. military. Minerva, 6 (1), 44-71.
- Thomas, P. J., & Holmes, B. L. (1983). Gender differences in the evaluation of narratives in officer performance ratings. San Diego, CA: Naval Personnel Research and Development Center. (# NPRDC-TR-83-14; March)
- Thomas, V. G., Milburn, N. G., Brown, D. R., & Gary, L. E. (1988). Social support and depressive symptoms among Blacks. The Journal of Black Psychology, 14 (2), 35-45.
- USMC FY86 affirmative action plan assessment. (1987). Washington, DC: Headquarters, United States Marine Corps. (Document # 5354/2, MHE-3; 6 April 1987).
- USMC FY87 military equal opportunity assessment. (1987). Washington, DC: Headquarters, United States Marine Corps. (Document # 5354/2, MHE-3-EO-3; 1 April 1988).
- USMC equity rates. (1988). Washington, DC: Headquarters, United States Marine Corps.
- U.S. Navy annual assessment of military equal opportunity programs for FY-87. (1988). Washington, DC: Department Of The Navy. (Document # 7700 Ser 151/; 29 March 1988).
- Verdugo, R. R., & Verdugo, N. T. (1988). Overeducation and the earnings of Black, Hispanic and White male workers. Sociological Perspectives, 31 (2), 190-212.
- White, J. R. (1979). Women on Minuteman missile crews. Maxwell Air Force Base, AL: Air Command and Staff College. (Report # ACSC2585-79).
- Wiggins, E. E. (1988). The implications of national demographic trends on the employment opportunities of women entering the Armed Forces. Paper presented at Project on Equal Education Rights, Washington, DC. March 30-31, 1988.
- Wright, C. A., & Wright, S. D. (1987). The role of mentors in career development of young professionals. Family Relations, 36, 204-208.

Zucca, G. J. (1984). Ethnic distribution among U.S. Navy occupation specialties and ranks: Organizational implications. (1984). University of Florida (Gainesville) Doctoral Thesis.

Zucca, G. J., & Gorman, B. (1986). Affirmative action: Blacks and Hispanics in U.S. Navy occupational specialties. Armed Forces and Society, 12 (4), 513-524.